Getting 802.11n Wireless into Hotel Rooms is a Snap

But it takes some unconventional thinking

The AP 6511 802.11n Wall Plate Access Point

Wireless access points have been traditionally designed to provide wireless service in relatively open spaces. While this works well in most homes and offices, it faces challenges with regard to planning and installation in hotels and other multiple dwelling unit facilities, which can affect quality of service and cost.

In this paper we will address a relatively unconventional means to quickly and cost effectively overcome these challenges and provide high quality Wi-Fi without the convention cost and hassle. The solution is simple – use a wall plate access point that can be quickly snapped into place (in minutes, not hours) on the wall inside the guest room using the existing CAT5/6 wires in the walls. And because the wall plate location is at the end of the room with the lowest attenuation (firewalls, firedoors, tile, mirrors, and water pipes), the radio quality from room to room is very strong – all without requiring site surveys and planning.

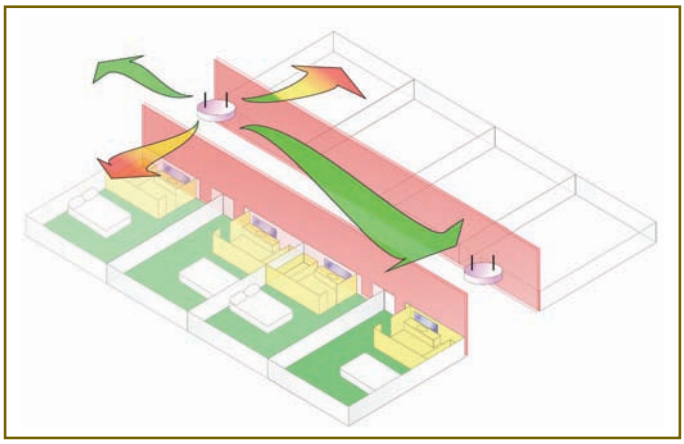
Since the wireless wall plate is rather unconventional, we'll address how it compares with the traditional thinking in each essential phase of wireless (WLAN) planning, installation, and management.

Motorola AP 6511 802.11n wallplate access point

WLAN Planning – *Get it right the first time*

TRADITIONAL THINKING

The goal of the site survey is to determine the optimal placement of the minimum amount of access points to provide reliable RF coverage.



Optimal placement is code for "where and how do I install this thing?"

Installation in the hallway

Traditionally, access points are installed in the hallways, and push the power through firewalls, firedoors, and around mirrors. The site survey needs to consider these factors and ensure coverage within the guest room.

Hallway ceilings of a typical hotel are hardcap to meet fire code regulations. The cost of installation in a hardcap ceiling can average $400 per AP. Another factor to consider is co-channel interference between APs with little attenuation between them. During the site survey, this is usually ignored.

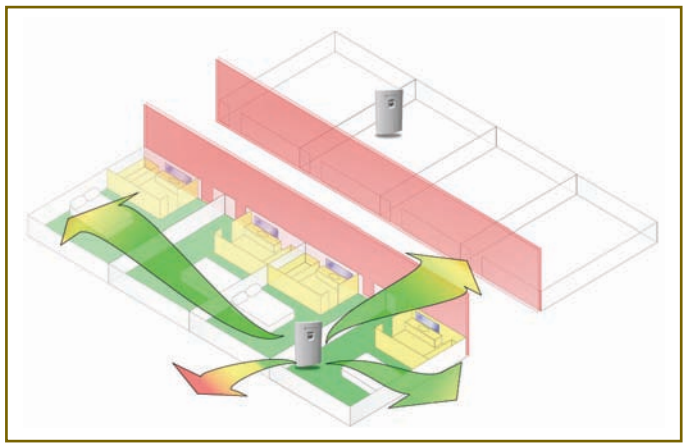
Because of these two factors — high signal attenuation and high installation cost — the physical placement of the access point is a critical determinant of the wireless WLAN success.

If you make a mistake

A poor site selection for the access point is very difficult to correct. Typical corrective action usually involves a higher gain antenna or relocating the installation site of the access point.

NEW THINKING

The goal of the site survey focuses on RF planning, not physical installation



By installing the access point inside the guest room, the physical placement is always known. Installation density is easy to control and installation location is easy to change.

When the access point is installed in the room, co-channel interference is greatly reduced. It's easy to understand why: the walls that attenuate the guest signal also prevent one access point from interfering with another access point on the same channel.

Pre-installation site surveys can now focus on the RF planning and not the physical installation. This will lead to a more reliable site survey. If the MDUs are constructed of multiple, repeating rooms, a simple site survey can easily be replicated and adjusted on the fly.

WLAN Installation – *Bring out the hammer drill*

TRADITIONAL THINKING
Plan one to three hours per AP for the physical installation, depending on the ceiling access and cable routing.

Each hotel can require a different installation. Some hotels use concrete construction, making installation in the hallway an arduous task with ladders and hammer drills. The installation problems are closely associated with the site survey already discussed. During the site survey, it is equally important to pay attention to how the cables will be run.

NEW THINKING
Repeatable, consistent installation routine

Consistency is the key to lowering installation cost. Service providers will train their installation teams to follow a set routine and replicate the procedure at every site.

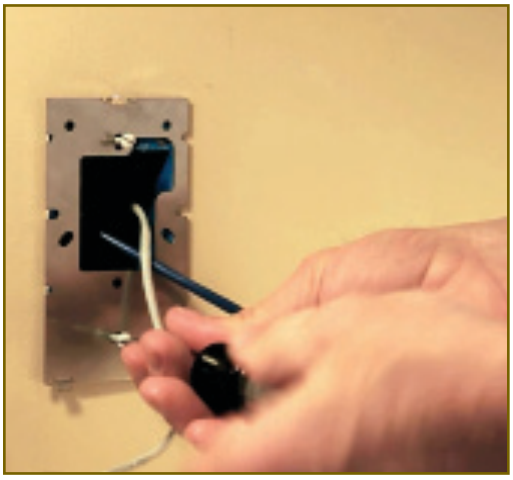
The AP 6511 installation is simple:

1. Remove the existing structured wiring plate

2. Install the Universal Bracket

3. Connect the pigtail RJ45 cable from the access point to the structured cabling

4. "Hook and Snap" the access point to the bracket



WLAN Management – *Does it Scale?*

TRADITIONAL THINKING
Use Independent APs when only a few are installed. Use an on-premises RF switch as a single point of management for many APs.

The problem with the traditional thinking is that most hotels will fall into the donut hole between a standalone managed access point network and a controller based network. Many service providers opt to install the RF switch, and absorb the added cost.

NEW THINKING
Scalable Management from One to Thousands

The value of an RF controller based network is a central point of management, and a central site from which to optimize the packets in the network. The RF controller provides a single point of command and control, collects rogue AP data and optimizes voice over WLAN applications by pre-authenticating devices as they roam across access points. These key values should not be given up simply because a facility is too small to justify the cost of the controller.

The AP 6511 management is incremental, and cost effective for each size hotel. The access point can can be managed in one of three modes:

1. Independent mode. Use a command line interface or web UI to manage the access point.

2. Controller AP. Any AP 6511 can be designed as the controller AP to manage all other AP 6511s on the premises. The controller AP works for up to 25 AP 6511s with auto-failover to a backup controller AP.

3. RF Switch managed. As the network size increases beyond 25 AP 6511s, an RF switch is a cost effective, practical method to manage the scalable network. Motorola RF switches will manage hundreds to thousands of APs.

40% of the hotel market is comprised of Limited Service hotels with fewer than 100 guest rooms. Considering the AP 6511 will serve 6 to 8 rooms (determined by hotel architecture), a total of 12 to 16 APs will be used for the guest room network.

If the hotel does not have meeting rooms, a few additional AP 6511s will be used for the business center and lobby; for a total of less than 20 APs per Limited Service hotel.

Only Motorola Controller AP offers a central management solution that scales to this size network. Controller AP code is included in each AP 6511.

Controller AP Features:

Device Management
The controller AP is the central point of control for configuration, firmware management, status and statistics. Reporting tools, network diagnostics, and auto-failover to a standby manager maintain the network availability.

RF Management
Auto channel selection and transmit power adjustment remove complex tasks from the network installer and ensure minimal co-channel interference. Quick start configuration, site survey assistance, and wireless IDS are all supported.

Client Management
Wireless clients are tracked and graphed along with proactive and reactive diagnostics. Wireless clients will enjoy the high uptime and performance of an enterprise class network.

Other AP 6511 advantages tailored to hotels

Universal Mounting
The AP 6511 installation is a snap – literally. The universal mounting bracket has six different hole patterns matching telecom plates found around the world.

The AP 6511 was designed to mount over a telecom plate – but that is not always practical or desired. To provide a flexible installation, the backside of the access point is flat with recessed connectors. This allows the access point to be installed over any surface: a telecom plate, on a wall, on the ceiling, or simply placed on a table top.

Tamper-proof, fast installation
Once installed, a small screwdriver is required to release the latch and remove the access point from the wall. A torx and pin security screw is included so the latch can not be removed without a special tool.

The AP 6511 LEDs can be disabled by network command. Why? When installed in a hotel guest room or other public area, the LEDs can attract unwanted attention. Easy solution: turn them off when the installation is complete.

Modular Ethernet Ports
Many hotels will want wireless only in the guest rooms. About 50% of hotels will want to offer both wired and wireless. Motorola sells a three port Ethernet module to add three additional ports to the AP. Field upgradable, the Ethernet module can be used to expand additional services such as wired LAN access or IPTV set-top box.

The AP 6511 supports five unique configurations designed to meet a variety of applications:

1. AP-only

2. access point + any keystone or QuickPort styled snap-in connector

3. access point + one Ethernet LAN port connected to internal data plane

4. access point + snap-in connector + three Ethernet LAN ports

5. access point + four Ethernet LAN ports

The access point has a small Ethernet LAN port recessed on the back of the unit. Typically, this port is used for the configuration #3 above. However, it can be useful in some deployments to route a switched LAN port back through the telecom wall box to another location in the room.

Snap-In Keystone Port
In hotel guest rooms, often the telecom plate has two ports; one RJ45 for Ethernet and one RJ11 for analog telephone. Or, the RJ11 may be replaced with an f-connector for the TV.

When the AP 6511 is installed over the plate, the secondary network (RJ11 or f-connector) can be exposed by snapping the connector into the Keystone style snap-in port. Actually, there are dozens of keystone style connectors commonly used in voice, data and audio networks.

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